Abstract

An all-optical reference node in an optical communication network detects the power in each channel and, using an optical power monitor and a series of voltage-controlled attenuators connected in a feedback loop, adjusts the power in each channel so as to equalize the power in all channels. The optical reference node also removes amplified spontaneous emissions. Likewise, the power of each channel added at an add/drop node is equalized to the power in the channels that pass through the add/drop node. Thus the power in the respective channels is equal through the network, and amplifiers located at intervals on the network are not driven into saturation as they attempt to amplify weaker signals. According to another embodiment, a simplified optical communication network contains only passive components.